



General

Guideline Title

Urinary incontinence in neurological disease. Management of lower urinary tract dysfunction in neurological disease.

Bibliographic Source(s)

National Clinical Guideline Centre. Urinary incontinence in neurological disease. Management of lower urinary tract dysfunction in neurological disease. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. 40 p. (Clinical guideline; no. 148).

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Clinical Guideline Centre (NCGC) on behalf of the National Institute for Health and Clinical Excellence (NICE). See the "Availability of Companion Documents" field for the full version of this guidance.

The following recommendations apply to both adults and children and young people unless otherwise stated.

Assessment of Lower Urinary Tract Dysfunction in Patients with Neurological Conditions

Assessment applies to new patients, those with changing symptoms, and those requiring periodic reassessment of their urinary tract management. The interval between routine assessments will be dictated by the person's particular circumstances (for example, their age, diagnosis, and type of management) but should not exceed 3 years.

These recommendations on assessment apply to people who have a neurological condition. If the assessment shows the incontinence to be non-neurogenic, please refer to NICE clinical guideline 97 (see the NGC summary [Lower urinary tract symptoms in men: assessment and management](#)) and NICE clinical guideline 40 [Urinary incontinence](#) for guidance on management.

Clinical Assessment

When assessing lower urinary tract dysfunction in a person with neurological disease, take a clinical history, including information about:

- Urinary tract symptoms
- Neurological symptoms and diagnosis (if known)
- Clinical course of the neurological disease

- Bowel symptoms
- Sexual function
- Comorbidities
- Use of prescription and other medication and therapies

Assess the impact of the underlying neurological disease on factors that will affect how lower urinary tract dysfunction can be managed, such as:

- Mobility
- Hand function
- Cognitive function
- Social support
- Lifestyle

Undertake a general physical examination that includes:

- Measuring blood pressure
- An abdominal examination
- An external genitalia examination
- A vaginal or rectal examination if clinically indicated (for example, to look for evidence of pelvic floor prolapse, faecal loading, or alterations in anal tone)

Carry out a focused neurological examination, which may need to include assessment of:

- Cognitive function
- Ambulation and mobility
- Hand function
- Lumbar and sacral spinal segment function

Undertake a urine dipstick test using an appropriately collected sample to test for the presence of blood, glucose, protein, leukocytes, and nitrites. Appropriate urine samples include clean-catch midstream samples, samples taken from a freshly inserted intermittent sterile catheter and samples taken from a catheter port. Do not take samples from leg bags.

If the dipstick test result and person's symptoms suggest an infection, arrange a urine bacterial culture and antibiotic sensitivity test before starting antibiotic treatment. Treatment need not be delayed but may be adapted when results are available.

Be aware that bacterial colonisation will be present in people using a catheter and so urine dipstick testing and bacterial culture may be unreliable for diagnosing active infection.

Ask people and/or their family members and carers to complete a 'fluid input/urine output chart' to record fluid intake, frequency of urination and volume of urine passed for a minimum of 3 days.

Consider measuring the urinary flow rate in people who are able to void voluntarily.

Measure the post-void residual urine volume by ultrasound, preferably using a portable scanner, and consider taking further measurements on different occasions to establish how bladder emptying varies at different times and in different circumstances.

Consider making a referral for a renal ultrasound scan in people who are at high risk of renal complications such as those with spina bifida or spinal cord injury.

Refer people for urgent investigation if they have any of the following 'red flag' signs and symptoms:

- Haematuria
- Recurrent urinary tract infections (for example, three or more infections in the last 6 months)
- Loin pain
- Recurrent catheter blockages (for example, catheters blocking within 6 weeks of being changed)
- Hydronephrosis or kidney stones on imaging
- Biochemical evidence of renal deterioration

Be aware that unexplained changes in neurological symptoms (for example, confusion or worsening spasticity) can be caused by urinary tract disease, and consider further urinary tract investigation and treatment if this is suspected.

Refer people with changes in urinary function that may be due to new or progressing neurological disease needing specialist investigation (for example, syringomyelia, hydrocephalus, multiple system atrophy, or cauda equina syndrome).

Assess the impact of lower urinary tract symptoms on the person's family members and carers and consider ways of reducing any adverse impact. If it is suspected that severe stress is leading to abuse, follow local safeguarding procedures.

Urodynamic Investigations

Do not offer urodynamic investigations (such as filling cystometry and pressure-flow studies) routinely to people who are known to have a low risk of renal complications (for example, most people with multiple sclerosis).

Offer video-urodynamic investigations to people who are known to have a high risk of renal complications (for example, people with spina bifida, spinal cord injury, or anorectal abnormalities).

Offer urodynamic investigations before performing surgical treatments for neurogenic lower urinary tract dysfunction.

Information and Support

Offer people with neurogenic urinary tract dysfunction, their family members and carers specific information and training. Ensure that people who are starting to use, or are using, a bladder management system that involves the use of catheters, appliances, or pads:

- Receive training, support, and review from healthcare professionals who are trained to provide support in the relevant bladder management systems and are knowledgeable about the range of products available.
- Have access to a range of products that meet their needs.
- Have their products reviewed, at a maximum of 2 yearly intervals.

Tailor information and training to the person's physical condition and cognitive function to promote their active participation in care and self-management.

Inform people how to access further support and information from a healthcare professional about their urinary tract management.

NICE has produced guidance on the components of good patient experience in adult National Health Services (NHS) services. All healthcare professionals should follow the recommendations in [Patient experience in adult NHS services](#) (NICE clinical guideline 138). Recommendations on shared decision making and information enabling people to actively participate in their care can be found in section 1.5 of NICE clinical guideline 138.

Treatment to Improve Bladder Storage

Behavioural Treatments

Consider a behavioural management programme (for example, timed voiding, bladder retraining, or habit retraining) for people with neurogenic lower urinary tract dysfunction:

- Only after assessment by a healthcare professional trained in the assessment of people with neurogenic lower urinary tract dysfunction and
- In conjunction with education about lower urinary tract function for the person and/or their family members and carers

When choosing a behavioural management programme, take into account that prompted voiding and habit retraining are particularly suitable for people with cognitive impairment.

Antimuscarinics

Offer antimuscarinic* drugs to people with:

- Spinal cord disease (for example, spinal cord injury or multiple sclerosis) and
- Symptoms of an overactive bladder such as increased frequency, urgency, and incontinence

Consider antimuscarinic* drug treatment in people with:

- Conditions affecting the brain (for example, cerebral palsy, head injury, or stroke) and
- Symptoms of an overactive bladder

Consider antimuscarinic* drug treatment in people with urodynamic investigations showing impaired bladder storage.

Monitor residual urine volume in people who are not using intermittent or indwelling catheterisation after starting antimuscarinic treatment.

When prescribing antimuscarinics, take into account that:

- Antimuscarinics known to cross the blood-brain barrier (for example, oxybutynin) have the potential to cause central nervous system-related side effects (such as confusion).
- Antimuscarinic treatment can reduce bladder emptying, which may increase the risk of urinary tract infections.
- Antimuscarinic treatment may precipitate or exacerbate constipation.

* At the time of publication (August 2012) not all antimuscarinics had a United Kingdom (UK) marketing authorisation for this indication or for use in both adults and children. The prescriber should follow relevant professional guidance when prescribing a drug without a marketing authorisation for this indication, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's (GMC's) [Good practice in prescribing medicines – guidance for doctors](#) for further information.

Botulinum Toxin Type A

Offer bladder wall injection with botulinum toxin type A* to adults:

- With spinal cord disease (for example, spinal cord injury or multiple sclerosis) and
- With symptoms of an overactive bladder and
- In whom antimuscarinic drugs have proved to be ineffective or poorly tolerated

Consider bladder wall injection with botulinum toxin type A* for children and young people:

- With spinal cord disease and
- With symptoms of an overactive bladder and
- In whom antimuscarinic drugs have proved to be ineffective or poorly tolerated

Offer bladder wall injection with botulinum toxin type A* to adults:

- With spinal cord disease and
- With urodynamic investigations showing impaired bladder storage and
- In whom antimuscarinic drugs have proved to be ineffective or poorly tolerated

Consider bladder wall injection with botulinum toxin type A* for children and young people:

- With spinal cord disease and
- With urodynamic investigations showing impaired bladder storage and
- In whom antimuscarinic drugs have proved to be ineffective or poorly tolerated

Before offering bladder wall injection with botulinum toxin type A:

- Explain to the person and/or their family members and carers that a catheterisation regimen is needed in most people with neurogenic lower urinary tract dysfunction after treatment, and
- Ensure that they are able and willing to manage such a regimen should urinary retention develop after the treatment.

Monitor residual urine volume in people who are not using a catheterisation regimen during treatment with botulinum toxin type A.

Monitor the upper urinary tract in people who are judged to be at risk of renal complications (for example, those with high intravesical pressures on filling cystometry) during treatment with botulinum toxin type A.

Ensure that people who have been offered continuing treatment with repeated botulinum toxin type A injections have prompt access to repeat injections when symptoms return.

* At the time of publication (August 2012), botulinum toxin type A did not have UK marketing authorisation for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the GMC's [Good practice in prescribing medicines – guidance for doctors](#) for further information.

Augmentation Cystoplasty

Consider augmentation cystoplasty using an intestinal segment for people:

- With non-progressive neurological disorders and
- Complications of impaired bladder storage (for example, hydronephrosis or incontinence) and
- Only after a thorough clinical and urodynamic assessment and discussion with the patient and/or their family members and carers about complications, risks, and alternative treatments

Offer patients life-long follow-up after augmentation cystoplasty because of the risk of long-term complications. Potential complications include metabolic effects, such as the development of vitamin B₁₂ deficiency and the development of bladder cancer.

Treatment for Stress Incontinence

Pelvic Floor Muscle Training

Consider pelvic floor muscle training for people with:

- Lower urinary tract dysfunction due to multiple sclerosis or stroke or
- Other neurological conditions where the potential to voluntarily contract the pelvic floor is preserved

Select patients for this training after specialist pelvic floor assessment and consider combining treatment with biofeedback and/or electrical stimulation of the pelvic floor.

Urethral Tape and Sling Surgery

Consider autologous fascial sling surgery for people with neurogenic stress incontinence.

Do not routinely use synthetic tapes and slings in people with neurogenic stress incontinence because of the risk of urethral erosion.

Artificial Urinary Sphincter

Consider surgery to insert an artificial urinary sphincter for people with neurogenic stress incontinence only if an alternative procedure, such as insertion of an autologous fascial sling, is less likely to control incontinence.

When considering inserting an artificial urinary sphincter:

- Discuss with the person and/or their family members and carers the risks associated with the device, the possible need for repeat operations and alternative procedures
- Ensure that the bladder has adequate low-pressure storage capacity

Monitor the upper urinary tract after artificial urinary sphincter surgery (for example, using annual ultrasound scans), as bladder storage function can deteriorate in some people after treatment of their neurogenic stress incontinence.

Treatment to Improve Bladder Emptying

Alpha-Blockers

Do not offer alpha-blockers to people as a treatment for bladder emptying problems caused by neurological disease.

Management with Catheter Valves

In people for whom it is appropriate a catheter valve may be used as an alternative to a drainage bag.

This recommendation is from NICE clinical guideline 139 (see the NGC summary [Infection, prevention and control of healthcare-associated infections in primary and community care](#)).

To ensure that a catheter valve is appropriate, take into consideration the person's preference, family member and carer support, manual dexterity, cognitive ability, and lower urinary tract function when offering a catheter valve as an alternative to continuous drainage into a bag.

Consider the need for continuing upper urinary tract surveillance in people who have impaired bladder storage (for example, due to reduced bladder compliance).

Management with Ileal Conduit Diversion

For people with neurogenic lower urinary tract dysfunction who have intractable, major problems with urinary tract management, such as incontinence or renal deterioration:

- Consider ileal conduit diversion (urostomy) and
- Discuss with the person the option of simultaneous cystectomy as prophylaxis against pyocystis.

Treatment to Prevent Urinary Tract Infection

Do not routinely use antibiotic prophylaxis for urinary tract infections in people with neurogenic lower urinary tract dysfunction.

Consider antibiotic prophylaxis for people who have a recent history of frequent or severe urinary tract infections.

Before prescribing antibiotic prophylaxis for urinary tract infection:

- Investigate the urinary tract for an underlying treatable cause (such as urinary tract stones or incomplete bladder emptying).
- Take into account and discuss with the person the risks and benefits of prophylaxis.
- Refer to local protocols approved by a microbiologist or discuss suitable regimens with a microbiologist.

Ensure that the need for ongoing prophylaxis in all people who are receiving antibiotic prophylaxis is regularly reviewed.

When changing catheters in patients with a long-term indwelling urinary catheter:

- Do not offer antibiotic prophylaxis routinely.
- Consider antibiotic prophylaxis* for patients who:
 - Have a history of symptomatic urinary tract infection after catheter change or
 - Experience trauma[†] during catheterisation

This recommendation is from NICE clinical guideline 139 [see the NGC summary [Infection. prevention and control of healthcare-associated infections in primary and community care](#)].

* At the time of publication (August 2012), no antibiotics had a UK marketing authorisation for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the GMC's [Good practice in prescribing medicines – guidance for doctors](#) for further information.

[†] The guideline development group for NICE clinical guideline 139 (see the NGC summary [Infection. prevention and control of healthcare-associated infections in primary and community care](#)) defined trauma as frank haematuria after catheterisation or two or more attempts of catheterisation.

Monitoring and Surveillance Protocols

Do not rely on serum creatinine and estimated glomerular filtration rate in isolation for monitoring renal function* in people with neurogenic lower urinary tract dysfunction.

Consider using isotopic glomerular filtration rate when an accurate measurement of glomerular filtration rate is required (for example, if imaging of the kidneys suggests that renal function might be compromised)*.

Offer lifelong ultrasound surveillance of the kidneys to people who are judged to be at high risk of renal complications (for example, consider surveillance ultrasound scanning at annual or 2 yearly intervals). Those at high risk include people with spinal cord injury or spina bifida and those with adverse features on urodynamic investigations such as impaired bladder compliance, detrusor-sphincter dyssynergia, or vesico-ureteric reflux.

Do not use plain abdominal radiography for routine surveillance in people with neurogenic lower urinary tract dysfunction.

Consider urodynamic investigations as part of a surveillance regimen for people at high risk of urinary tract complications (for example, people with spina bifida, spinal cord injury, or anorectal abnormalities).

Do not use cystoscopy for routine surveillance in people with neurogenic lower urinary tract dysfunction.

Do not use renal scintigraphy for routine surveillance in people with neurogenic lower urinary tract dysfunction.

* For more information on the measurement of kidney function, see [Chronic kidney disease](#) (NICE clinical guideline 73).

Potential Complications: Providing Information and Initial Management

Renal Impairment

Discuss with the person and/or their family members and carers the increased risk of renal complications (such as kidney stones, hydronephrosis, and scarring) in people with neurogenic urinary tract dysfunction (in particular those with spina bifida or spinal cord injury). Tell them the symptoms to look out for (such as loin pain, urinary tract infection, and haematuria) and when to see a healthcare professional.

When discussing treatment options, tell the person that indwelling urethral catheters may be associated with higher risks of renal complications (such as kidney stones and scarring) than other forms of bladder management (such as intermittent self catheterisation).

Use renal imaging to investigate symptoms that suggest upper urinary tract disease.

Bladder Stones

Discuss with the person and/or their family members and carers the increased risk of bladder stones in people with neurogenic lower urinary tract dysfunction. Tell them the symptoms to look out for that mean they should see a healthcare professional (for example, recurrent infection, recurrent catheter blockages, or haematuria).

Discuss with the person and/or their family members and carers that indwelling catheters (urethral and suprapubic) are associated with a higher incidence of bladder stones compared with other forms of bladder management. Tell them the symptoms to look out for that mean they should see a healthcare professional (for example, recurrent infection, recurrent catheter blockages, or haematuria).

Refer people with symptoms that suggest the presence of bladder stones (for example, recurrent catheter blockages, recurrent urinary tract infection, or haematuria) for cystoscopy.

Bladder Cancer

Discuss with the person and/or family members and carers that there may be an increased risk of bladder cancer in people with neurogenic lower urinary tract dysfunction, in particular those with a long history of neurogenic lower urinary tract dysfunction and complicating factors, such as recurrent urinary tract infections. Tell them the symptoms to look out for (especially haematuria) that mean they should see a healthcare professional.

Arrange urgent (within 2 weeks) investigation with urinary tract imaging and cystoscopy for people with:

- Visible haematuria or
- Increased frequency of urinary tract infections or
- Other unexplained lower urinary tract symptoms

Access to and Interaction with Services

Access to and Interaction with Services

Provide contact details for the provision of specialist advice if a person has received care for neurogenic lower urinary tract dysfunction in a specialised setting (for example, in a spinal injury unit or a paediatric urology unit). The contact details should be given to the person and/or their family members and carers and to the non-specialist medical and nursing staff involved in their care.

Provide people with neurogenic lower urinary tract dysfunction, and/or their family members and carers with written information that includes:

- A list of key healthcare professionals involved in their care, a description of their role and their contact details
- Copies of all clinical correspondence
- A list of prescribed medications and equipment

This information should also be sent to the person's general practitioner.

NICE has produced guidance on the components of good patient experience in adult NHS services. All healthcare professionals should follow the recommendations in [Patient experience in adult NHS services](#) (NICE clinical guideline 138). Recommendations on tailoring healthcare services for each patient can be found in the section "Treatment to Improve Bladder Storage," above; and recommendations on continuity of care and relationships can be found in section 1.4 of NICE clinical guideline 138.

Transfer from Child to Adult Services

When managing the transition of a person from paediatric services to adult services for ongoing care of neurogenic lower urinary tract dysfunction:

- Formulate a clear structured care pathway at an early stage and involve the person and/or their parents and carers.

- Involve the young person's parents and carers when preparing transfer documentation with the young person's consent.
- Provide a full summary of the person's clinical history, investigation results, and details of treatments for the person and receiving clinician.
- Integrate information from the multidisciplinary health team into the transfer documentation.
- Identify and plan the urological services that will need to be continued after the transition of care.
- Formally transfer care to a named individual(s).

When receiving a person from paediatric services to adult services for ongoing care of neurogenic lower urinary tract dysfunction:

- Review the transfer documentation and liaise with the other adult services involved in ongoing care (for example, adult neuro-rehabilitation services).
- Provide the person with details of the service to which care is being transferred, including contact details of key personnel, such as the urologist and specialist nurses.
- Ensure that urological services are being provided after transition to adult services.

Consider establishing regular multidisciplinary team meetings for paediatric and adult specialists to discuss the management of neurogenic lower urinary tract dysfunction in children and young people during the years leading up to transition and after entering adult services.

Clinical Algorithm(s)

Clinical algorithms are provided in the full version of the original guideline document for:

- Initial care of the patient with neurogenic lower urinary tract dysfunction
- Further care of the patient with neurogenic lower urinary tract dysfunction: management within an appropriate multi-disciplinary team
- Neurogenic lower urinary tract dysfunction: treatment of specific problems

Scope

Disease/Condition(s)

Urinary tract incontinence in neurological disease

Guideline Category

Counseling

Diagnosis

Evaluation

Management

Prevention

Treatment

Clinical Specialty

Family Practice

Internal Medicine

Nephrology

Neurology

Pediatrics

Urology

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Health Care Providers

Hospitals

Nurses

Patients

Physician Assistants

Physicians

Public Health Departments

Guideline Objective(s)

To provide clinical guidelines on the management of lower urinary tract dysfunction in neurological disease in all ages

Target Population

Adults and children (from birth) with lower urinary tract dysfunction resulting from neurological disease and injury

Interventions and Practices Considered

Assessment/Diagnosis

1. Clinical history
2. Assessment of the impact of the underlying neurological disease on factors that will affect how lower urinary tract dysfunction can be managed
3. General physical examination
4. Focused neurological examination
5. Urine dipstick test (for the presence of blood, glucose, protein, leukocytes and nitrites)
6. Urine bacterial culture and antibiotic sensitivity test (as indicated)
7. Request people and/or their family members and carers to complete a 'fluid input/urine output chart'
8. Measurement of urinary flow rate
9. Ultrasound measurement of post-void residual urine volume
10. Renal ultrasound scan (as indicated)
11. Referral for urgent or specialist investigation (as indicated)
12. Assessment of the impact of lower urinary tract symptoms on the person's family members and carers
13. Urodynamic investigations (filling cystometry, pressure-flow studies)

Management/Treatment

1. Provision of specific information, support and training to people with neurogenic urinary tract dysfunction, their family members and carers
2. Behavioural management programme (timed voiding, bladder retraining or habit retraining)
3. Antimuscarinic drugs

4. Bladder wall injection with botulinum toxin type A
5. Augmentation cystoplasty
6. Treatment for stress incontinence
 - Pelvic floor muscle training
 - Autologous fascial sling surgery
 - Artificial urinary sphincter
7. Catheter valves
8. Ileal conduit diversion (urostomy)
9. Prevention of urinary tract infection (antibiotic prophylaxis)
10. Monitoring and surveillance
 - Isotopic glomerular filtration rate (an accurate measurement of glomerular filtration rate)
 - Lifelong ultrasound surveillance of the kidneys
 - Urodynamic investigations
11. Provision of information on and initial management of complications e.g., renal impairment, bladder stones, bladder cancer
12. Provision of contact details for specialist advice
13. Management of transfer from child to adult services

Major Outcomes Considered

- Frequency of voiding by day and night
- Number of incontinence episodes per week
- Severity of incontinence
- Urgency
- Symptoms relating to bladder emptying, for example poor urinary stream
- Quality of life
- Patients and carers' perception of symptoms
- Adverse events, including urinary tract infections, renal complications, bladder stones, and unscheduled hospital admissions
- Treatment adherence
- Kidney function
- Cost-effectiveness

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Clinical Guideline Centre (NCGC) on behalf of the National Institute for Health and Clinical Excellence (NICE). See the "Availability of Companion Documents" field for the full version of this guidance.

Searching for Evidence

Clinical Literature Search

Systematic literature searches were undertaken to identify relevant evidence within published literature. These searches were conducted in accordance with The Guidelines Manual (2009) (see the "Availability of Companion Documents" field). Clinical databases were searched using

relevant medical subject headings, free-text terms and study type filters where appropriate. Studies published in languages other than English were not reviewed. Where possible, searches were restricted to articles published in the English language. All searches were conducted in the following core databases: MEDLINE, Embase, Cinahl, and The Cochrane Library. An additional subject specific database (PsycINFO) was used for the patient information question. All searches were updated on 10th January 2012. No papers after this date were considered.

The accuracy of search strategies was assured by cross-checking with: the bibliographies of relevant key papers, search strategies in other systematic reviews, and guideline development group-recommended studies. The questions, the study types applied, the databases searched and the years covered can be found in Appendix C of the full version of the original guideline document.

During the scoping stage, a topic-specific search was conducted for guidelines/reports in the generic websites listed below, and in those of relevant specialist organisations. Searches for grey or unpublished literature were not undertaken. All references sent by stakeholders were considered.

- Guidelines International Network database (www.g-i-n.net/)
- National Guideline Clearinghouse (www.guideline.gov/)
- National Institute for Health and Clinical Excellence (www.nice.org.uk/)
- Scottish Intercollegiate Guidelines Network (www.sign.ac.uk/)
- NHS Evidence (www.evidence.nhs.uk/)
- TRIP Database (www.tripdatabase.com/)

Health Economic Literature Search

Systematic literature searches were also undertaken to identify relevant health economic evidence within published literature. A broad search relating to the guideline population was conducted in the National Health Service economic evaluation database (NHS EED), the Health Economic Evaluations Database (HEED) and Health Technology Assessment (HTA) database, with no date restrictions applied. Using a specific economic filter, the search was also run in MEDLINE and Embase from 2009 - to ensure recent publications that had not yet been indexed by the aforementioned databases were identified. Where possible, searches were restricted to articles published in the English language.

The search strategies for health economics are included in Appendix C of the full version of the original guideline document. All searches were updated on 10th January 2012. No papers published after this date were considered.

Evidence of Effectiveness

The Research Fellow:

- Identified potentially relevant studies for each review question from the relevant search results by reviewing titles and abstracts – full papers were then obtained.
- Reviewed full papers against pre-specified inclusion / exclusion criteria to identify studies that addressed the review question in the appropriate population and reported on outcomes of interest (review protocols are included in Appendix D of the full guideline document).
- Critically appraised relevant studies using the appropriate checklist as specified in The Guidelines Manual.
- Extracted key information about the study's methods and results into evidence tables (evidence tables are included in Appendix F of the full guideline document).
- Generated summaries of the evidence by outcome (included in the relevant chapter write-ups):
 - Randomised studies: meta-analysed, where appropriate and reported in GRADE profiles (for clinical studies) – see below for details
 - Observational studies: data presented in modified GRADE profiles
 - Qualitative studies: each study summarised in a table where possible, otherwise presented in a narrative.

Inclusion/Exclusion

See the review protocols in Appendix D of the full version of the original guideline document for full details. The following inclusion/exclusion criteria are of note. A minimum sample size of 20 participants was the minimum requirement for studies to be included on the question on antimuscarinics. For the question on behaviour therapy the population included elderly patients without neurological disease or injury. For the question on access to and experience of services the population included patients with neurological disease or injury who did not necessarily have incontinence. For this question, the websites of stakeholder organisations were searched for relevant audit or survey data.

Types of Studies

For the intervention reviews, randomised controlled trials (RCTs) were the considered the most robust type of study design that could produce an unbiased estimate of effect. However for some questions, RCTs were not available and the Guideline Development Group (GDG) considered

evidence from observational studies to be relevant. This is detailed in the review protocols in Appendix D of the full guideline document (see the "Availability of Companion Documents" field).

Evidence of Cost-Effectiveness

Evidence on cost-effectiveness related to the key clinical issues being addressed in the guideline was sought.

The Health Economist:

- Undertook a systematic review of the economic literature
- Undertook new cost-effectiveness analysis in priority areas

Literature Review

The Health Economist:

- Identified potentially relevant studies for each review question from the economic search results by reviewing titles and abstracts – full papers were then obtained.
- Reviewed full papers against pre-specified inclusion/exclusion criteria to identify relevant studies (see below for details).
- Critically appraised relevant studies using the economic evaluations checklist as specified in The Guidelines Manual.
- Extracted key information about the study's methods and results into evidence tables (evidence tables are included in Appendix G of the full guideline document).
- Generated summaries of the evidence in NICE economic evidence profiles (included in the relevant chapter write-ups)

Inclusion/Exclusion

Full economic evaluations (studies comparing costs and health consequences of alternative courses of action: cost–utility, cost-effectiveness, cost-benefit and cost-consequence analyses) and comparative costing studies that addressed the review question in the relevant population were considered potentially applicable as economic evidence.

Studies that only reported cost per hospital (not per patient), or only reported average cost- effectiveness without disaggregated costs and effects, were excluded. Abstracts, posters, reviews, letters/editorials, foreign language publications and unpublished studies were excluded. Studies judged to have had an applicability rating of 'not applicable' were excluded (this included studies that took the perspective of a non-Organisation for Economic Cooperation and Development [OECD] country).

Remaining studies were prioritised for inclusion based on their relative applicability to the development of this guideline and the study limitations. For example, if a high quality, directly applicable UK analysis was available other less relevant studies may not have been included. Where exclusions occurred on this basis, this is noted in the relevant section.

For more details about the assessment of applicability and methodological quality see the economic evaluation checklist (The Guidelines Manual, Appendix H) and the health economics research protocol in Appendix D of the full guideline document (see the "Availability of Companion Documents" field).

When no relevant economic analysis was found from the economic literature review, relevant UK NHS unit costs related to the compared interventions were presented to the GDG to inform the possible economic implication of the recommendation to make.

Number of Source Documents

See Appendix E of the full version of the original guideline document for the number of source documents by review question (see the "Availability of Companion Documents" field).

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Level	Description
High	Further research is very unlikely to change the confidence in the estimate of effect
Moderate	Further research is likely to have an important impact on the confidence in the estimate of effect and may change the estimate
Low	Further research is very likely to have an important impact on the confidence in the estimate of effect and is likely to change the estimate.
Very low	Any estimate of effect is very uncertain.

Methods Used to Analyze the Evidence

Meta-Analysis

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Clinical Guideline Centre (NCGC) on behalf of the National Institute for Health and Clinical Excellence (NICE). See the "Availability of Companion Documents" field for the full version of this guidance.

Evidence of effectiveness

Methods of Combining Clinical Studies

Where possible, meta-analyses were conducted to combine the results of studies for each review question using Cochrane Review Manager (RevMan5) software. Fixed-effects (Mantel-Haenszel) techniques were used to calculate risk ratios (relative risk) for the binary outcomes: incontinence, measures of renal function (frequency of occurrence), adverse events, and treatment continuance. The continuous outcomes incontinence (frequency of incontinence episodes) and urodynamics investigations were analysed using an inverse variance method for pooling weighted mean differences and where the studies had different scales, standardised mean differences were used.

When no events were recorded in the control arm, the Peto odds ratio was calculated. The risk difference was used to derive the absolute effects.

Statistical heterogeneity was assessed by considering the chi-squared test for significance at probability (p) < 0.1 or an I-squared inconsistency statistic of $> 50\%$ to indicate significant heterogeneity.

For continuous outcomes, the means and standard deviations were required for meta-analysis. In some cases data relative risks (categorical outcomes) and mean difference (continuous outcomes) could not be calculated (for example medians or p values only were presented). Here, the guideline development group (GDG) present the data available but do not assess imprecision. Evidence statements are not produced for these outcomes.

For categorical outcomes, absolute event rates were also calculated using the GRADEpro software using event rate in the control arm of the pooled results.

Types of Analysis

Estimates of effect from individual studies were based on Intention To Treat (ITT) analysis with the exception of the outcome of experience of adverse events where Available Case Analysis (ACA) was used (or ITT if this was not possible). ITT analysis is where all participants that were randomised are considered in the final analysis based on the intervention and control groups to which they were originally assigned. The Guideline Development Group (GDG) assumed that participants in the trials lost to follow-up did not experience an outcome of interest (categorical outcomes) and they would not considerably change the average scores of their assigned groups (for continuous outcomes).

It is important to note that ITT analyses tend to bias the results towards no difference. ITT analysis is a conservative approach to analyse the data,

and therefore the effect may be smaller than in reality.

Appraising the Quality of Evidence by Outcomes

The evidence for outcomes from the included RCT and observational studies were evaluated and presented using an adaptation of the 'GRADE toolbox' developed by the international GRADE working group (<http://www.gradeworkinggroup.org/>). The software (GRADEpro) developed by the GRADE working group was used to assess the quality of each outcome, taking into account individual study quality and the meta-analysis results. The summary of findings characteristics and findings was presented as one table in the full version of the original guideline document. This table includes pooled outcome data, where appropriate, an absolute measure of the intervention effect, and the summary of quality of evidence for that outcome. In this table, the columns for intervention and control indicate the sum of the sample size for continuous outcomes. For binary outcomes such as number of patients with an adverse event, the event rates (n/N: number of patients with events divided by sum of number of patients) are shown with percentages. Reporting or publication bias was only taken into consideration in the quality assessment and included if it was apparent.

Each outcome was examined separately for the quality elements listed and defined in Table 1 of the full version of the original guideline document and each graded using the quality levels listed in Table 4 of the full version of the original guideline document: The main criteria considered in the rating of these elements are discussed in section 4.3.6 in the full version of the original guideline document. Footnotes were used to describe reasons for grading a quality element as having serious or very serious problems. The ratings for each component were summed to obtain an overall assessment for each outcome.

Grading the Quality of Clinical Evidence

After results were pooled, the overall quality of evidence for each outcome was considered (see the "Rating Scheme for the Strength of the Evidence" field). The following procedure was adopted when using GRADE:

1. A quality rating was assigned, based on the study design. RCTs start HIGH and observational studies as LOW, uncontrolled case series as LOW or VERY LOW.
2. The rating was then downgraded for the specified criteria: Study limitations, inconsistency, indirectness, imprecision and reporting bias. These criteria are detailed below. Observational studies were upgraded if there was: a large magnitude of effect, dose-response gradient, and if all plausible confounding would reduce a demonstrated effect or suggest a spurious effect when results showed no effect. Each quality element considered to have "serious" or "very serious" risk of bias were rated down -1 or -2 points respectively.
3. The downgraded/upgraded marks were then summed and the overall quality rating was revised. For example, all RCTs started as HIGH and the overall quality became MODERATE, LOW or VERY LOW if 1, 2 or 3 points were deducted respectively.
4. The reasons or criteria used for downgrading were specified in the footnotes.

Evidence was also appraised for study limitations, inconsistency, indirectness, and imprecision. See sections 4.3.7-4.3.10 in the full version of the original guideline document for detail.

Evidence Statements

Evidence statements summarising the results of the trials by outcome were produced for all study types. For RCTs the statements were based on the statistical significance of the results. Statements were not produced when no estimation of the intervention effect could be calculated. A substantial proportion of the evidence for this guideline was from observational studies (in particular before and after studies). To aid the reader of the guideline, the decision was taken to summarise these studies with evidence statements describing the overall direction of the results. If the studies were too heterogeneous, statements summarising the main conclusion of each study were produced.

Evidence of Cost-Effectiveness

NICE Economic Evidence Profiles

The NICE economic evidence profile has been used to summarise cost and cost-effectiveness estimates. The economic evidence profile shows, for each economic study, an assessment of applicability and methodological quality, with footnotes indicating the reasons for the assessment. These assessments were made by the health economist using the economic evaluation checklist from The Guidelines Manual, Appendix H. It also shows incremental costs, incremental outcomes (for example, quality-adjusted life years [QALYs]), and the incremental cost-effectiveness ratio from the primary analysis, as well as information about the assessment of uncertainty in the analysis. If a non-United Kingdom (UK) study was included in the profile, the results were converted into pounds sterling using the appropriate purchasing power parity.

Where economic studies compare multiple strategies, results are presented in the economic evidence profiles for the pair-wise comparison specified in the review question, irrespective of whether or not that comparison was 'appropriate' within the analysis being reviewed. A comparison

is 'appropriate' where an intervention is compared with the next most expensive non-dominated option – a clinical strategy is said to 'dominate' the alternatives when it is both more effective and less costly. Footnotes indicate if a comparison was 'inappropriate' in the analysis.

Undertaking New Health Economic Analysis

As well as reviewing the published economic literature for each review question as described above, new economic analysis was undertaken by the Health Economist in priority areas. Priority areas for new health economic analysis were agreed by the GDG after formation of the review questions and consideration of the available health economic evidence.

Additional data for the analysis was identified as required through additional literature searches undertaken by the Health Economist, and discussion with the GDG. Model structure, inputs, and assumptions were explained to and agreed by the GDG members during meetings, and they commented on subsequent revisions.

Cost-Effectiveness Criteria

NICE's report 'Social value judgements: principles for the development of NICE guidance' sets out the principles that GDGs should consider when judging whether an intervention offers good value for money (see the "Availability of Companion Documents" field).

In general, an intervention was considered to be cost-effective if either of the following criteria applied (given that the estimate was considered plausible):

- a. The intervention dominated other relevant strategies (that is, it was both less costly in terms of resource use and more clinically effective compared with all the other relevant alternative strategies), or
- b. The intervention cost less than £20,000 per QALY gained compared with the next best strategy.

If the GDG recommended an intervention that was estimated to cost more than £20,000 per QALY gained, or did not recommend one that was estimated to cost less than £20,000 per QALY gained, the reasons for this decision are discussed explicitly in the 'from evidence to recommendations' section of the relevant chapter with reference to issues regarding the plausibility of the estimate or to the factors set out in the 'Social value judgements: principles for the development of NICE guidance'.

If a study reported the cost per life year gained but not QALYs, the cost per QALY gained was estimated by multiplying by an appropriate utility estimate to aid interpretation. The estimated cost per QALY gained is reported in the economic evidence profile with a footnote detailing the life-years gained and the utility value used. When QALYs or life years gained are not used in the analysis, results are difficult to interpret unless one strategy dominates the others with respect to every relevant health outcome and cost.

Methods Used to Formulate the Recommendations

Expert Consensus

Informal Consensus

Description of Methods Used to Formulate the Recommendations

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Clinical Guideline Centre (NCGC) on behalf of the National Institute for Health and Clinical Excellence (NICE). See the "Availability of Companion Documents" field for the full version of this guidance.

This guidance was developed in accordance with the methods outlined in the NICE Guidelines Manual 2009 (see the "Availability of Companion Documents" field).

Who Developed This Guideline?

A multidisciplinary Guideline Development Group (GDG) comprising professional group members and consumer representatives of the main stakeholders developed this guideline. The group met every five weeks during the development of the guideline.

Staff from the NCGC provided methodological support and guidance for the development process. The team working on the guideline included a project manager, systematic reviewers, health economists, and information scientists. They undertook systematic searches of the literature, appraised the evidence, conducted meta-analysis and cost-effectiveness analysis where appropriate and drafted the guideline in collaboration with

the GDG.

Developing the Review Questions and Outcomes

Review questions were developed in a PICO framework (patient, intervention, comparison, and outcome) for intervention reviews, and with a framework of population, index tests, reference standard and target condition for reviews of diagnostic test accuracy. This was to guide the literature searching process and to facilitate the development of recommendations by the GDG. The question 'What criteria of signs/symptoms should be used to refer patients for specialist assessment?' was based on GDG expert opinion and no literature search was performed. The questions were drafted by the NCGC technical team and refined and validated by the GDG. The questions were based on the key clinical areas identified in the scope. The outcomes are presented according to importance (of improving patient outcomes or minimising harm). Further information on the outcome measures examined can be found in the "Major Outcomes Considered" field and in section 4.1 of the full version of the original guideline.

Developing Recommendations

Over the course of the guideline development process, the GDG was presented with:

- Evidence tables of the clinical and economic evidence reviewed from the literature. All evidence tables are in Appendix F of the full version of the original guideline document.
- Summary of clinical and economic evidence and quality (as presented in chapters 6-13 of the full version of the original guideline document)
- Forest plots and summary receiver operating characteristic (ROC) curves (see Appendix H of the full version of the original guideline document)
- A description of the methods and results of the cost-effectiveness analysis undertaken for the guideline (see Appendix I of the full version of the original guideline document)

Recommendations were drafted on the basis of the GDG interpretation of the available evidence, taking into account the balance of benefits, harms, and costs. When clinical and economic evidence was of poor quality, conflicting or absent, the GDG drafted recommendations based on their expert opinion. The considerations for making consensus based recommendations include the balance between potential harms and benefits, economic or implications compared to the benefits, current practices, recommendations made in other relevant guidelines, patient preferences, and equality issues. The consensus recommendations were done through discussions in the GDG, or methods of formal consensus were applied. The GDG may also consider whether the uncertainty is sufficient to justify delaying making a recommendation to await further research, taking into account the potential harm of failing to make a clear recommendation (see Section 5.3 in the full version of the original guideline document). The main considerations specific to each recommendation are outlined in the Evidence to Recommendation Section preceding the recommendation section in the full version of the original guideline document.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

See the chapters 6-16 in the full version of the original guideline document for discussion of cost-effectiveness by review question.

Botulinum Toxin Type A versus Augmentation Cystoplasty

Conclusion = Evidence Statement

The results of the cost analysis model allow four main conclusions to be drawn:

1. Augmentation cystoplasty (AC) is the cost effective intervention over a lifetime horizon in the populations where it is a relevant comparator.
2. Botulinum toxin type A (BTX) is cost effective compared to AC in patients where the full benefits of surgery are unlikely to be accrued (patients with shorter life expectancy or patients with a rapidly degenerating condition).
3. A BTX strategy where AC is used (and relevant) in 100% of patients after failed BTX is cost effective compared to a 0% progression to AC strategy but is higher cost.
4. BTX is cost effective when compared to no treatment.

See Appendix I of the full version of the original guideline document for additional details of the cost analysis.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The guideline was validated through two consultations.

1. The first draft of the guideline (the full guideline, National Institute for Health and Clinical Excellence [NICE] guideline, and Quick Reference Guide) were consulted with Stakeholders and comments were considered by the Guideline Development Group (GDG)
2. The final consultation draft of the full guideline, the NICE guideline and the Information for the Public were submitted to stakeholders for final comments.

The final draft was submitted to the Guideline Review Panel for review prior to publication.

The guidance is subject to a six week public consultation and feedback as part of the quality assurance and peer review the document. All comments received from registered stakeholders are responded to in turn and posted on the NICE website when the pre-publication check of the full guideline occurs.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate management of lower urinary tract dysfunction in neurological disease

Potential Harms

- Frequency volume charts, completed by the patient, are not associated with side effects and, in general, cause only minor inconvenience.
- Urine testing can lead to over-investigation and the unnecessary prescription of antibiotics in some patients. These problems can arise if inappropriate samples are analysed or if there is a failure to recognise that, in some patients (such as those using in-dwelling catheters), urine testing will often show abnormal results.
- Little harm is likely to result from unnecessary scanning through renal assessment by ultrasound examination, although patient inconvenience and, in some patients, anxiety are undesirable consequences.
- The possible adverse effects of urodynamic investigations include discomfort, urinary tract infection and psychological upset. Radiation exposure is an additional consideration when video-urodynamic investigations are used.
- It is recognised that long-term therapy with antimuscarinic drugs can be associated with side effects. Side effects can include problems such as dry mouth and constipation, but, perhaps of most concern, is the possibility that drug treatment can impact on cognitive function.
- Offer patients life-long follow-up after augmentation cystoplasty because of the risk of long-term complications. Potential complications include metabolic effects, such as the development of vitamin B₁₂ deficiency and the development of bladder cancer. Important side-effects of treatment include the possible need for future surgery.
- The Guideline Development Group (GDG) noted that there are possible differences in the effectiveness and safety profile of augmentation cystoplasty in adults as opposed to children. Specific concerns relate to an increased risk of bladder perforation and a possible reduced long-term effectiveness in children.

- Urethral sling procedures are capable of rendering a proportion of patients with neurogenic stress incontinence continent. There are associated risks which include the possibility of damage to the urethra or bladder during or after surgery. The GDG considered that tapes or slings that are made from synthetic materials are likely to carry an excess risk of tissue erosion and local infection. Furthermore there is extremely limited data available for synthetic tape procedures.
- The GDG felt that it is important to recognise that upper tract deterioration can be associated with the treatment of stress incontinence in patients with neurogenic lower urinary tract dysfunction (NLUTD) if bladder storage pressures are high. Bladder storage requires thorough pre-operative assessment. Post-operative upper urinary tract surveillance should be maintained. A subsequent augmentation cystoplasty may be required if bladder storage is unsafe.
- The most prominent risks for artificial urinary sphincter found in the studies were device failure (26%), bladder neck erosion or device infection (11%), the need for revision (34%), the need for complete removal (22%), urinary tract infections (UTIs) (9%), and upper tract complications (8%). It is accepted that sphincter devices have a finite lifespan of around 10 years and therefore will require replacement at some point as a matter of routine. However, the device is capable of curing or markedly improving incontinence in the majority of patients who receive implants for neurogenic stress urinary incontinence.
- Significant harm can arise if artificial urinary sphincter device infection or erosion occurs as revision surgery will then be essential. It is also accepted that upper tract deterioration will be seen in some patients if appropriate assessment and treatment of bladder dysfunction is not undertaken preoperatively and patient follow up is neglected. The GDG were aware of the experience of clinicians who first introduced the artificial urinary sphincter into clinical practice; the importance of the preoperative urodynamic assessment of bladder function was not appreciated at that time and upper tract deterioration was seen in some patients in whom low pressure storage capacity was lacking. The GDG agreed that preoperative assessment of the bladder to ensure low pressure storage capacity was necessary.
- There is a risk of harm from intermittent bladder drainage using a catheter valve (in the form of incontinence, infection, and renal damage) if catheter valves are used in patients whose bladders are not capable of storing urine at safe pressures.
- There is a risk of serious morbidity and mortality associated with ileal conduit diversion, particularly in patients with advanced neurological disease. The intervention would normally be considered when alternative less invasive options had failed or were felt to be likely to be unsuccessful. The evidence review identified that there is a risk of infection and stone formation in the defunctioned bladder that may, in some circumstances, justify a cystectomy being carried out at the time of urinary diversion.
- For the large majority of patients the use of antibiotic prophylaxis to prevent urinary tract infection is a benign intervention that is not associated with troublesome complications. However, the widespread use of antibiotics is known to be associated with the development of antibiotic resistance which is a risk both to individual patients and to the wider population. It is also recognised that the use of prophylactic antibiotics can be associated with serious complications. For example nitrofurantoin use can be associated with the development of pulmonary, neurological, and hepatic disease.
- In general clinical benefit was achieved with botulinum toxin type A injection with minor adverse events. Transient muscle weakness was noted to occur in a small number of patients. However, most recent randomised controlled trials showed an excess of urinary tract infections in patients treated with botulinum toxin type A. The GDG considered that this was likely to occur in patients who started intermittent catheterisation as a result of increased residual urine volumes after treatment.

Refer to the full version of the original guideline document (see the "Availability of Companion Documents" field) for the specific "Trade off between clinical benefits and harms" for individual recommendations.

Qualifying Statements

Qualifying Statements

- This guidance represents the view of the National Institute for Health and Clinical Excellence (NICE), which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summary of product characteristics of any drugs they are considering.
- Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.
- The guideline will assume that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients. This guideline recommends some drugs for indications for which they do not have a UK marketing authorisation at the date of

publication, if there is good evidence to support that use. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's (GMC's) [Good practice in prescribing medicines](#) – guidance for doctors for further information. Where recommendations have been made for the use of drugs outside their licensed indications ('off-label use'), these drugs are marked with a footnote in the recommendations.

Implementation of the Guideline

Description of Implementation Strategy

The National Institute for Health and Clinical Excellence (NICE) has developed tools to help organisations implement this guidance. These are available on the [NICE Web site](#); see also the "Availability of Companion Documents" field).

Key Priorities for Implementation

The following recommendations have been identified as priorities for implementation.

Assessment of Lower Urinary Tract Dysfunction in Patients with Neurological Conditions

- When assessing lower urinary tract dysfunction in a person with neurological disease, take a clinical history, including information about:
 - Urinary tract symptoms
 - Neurological symptoms and diagnosis (if known)
 - Clinical course of the neurological disease
 - Bowel symptoms
 - Sexual function
 - Comorbidities
 - Use of prescription and other medication and therapies
- If the dipstick test result and person's symptoms suggest an infection, arrange a urine bacterial culture and antibiotic sensitivity test before starting antibiotic treatment. Treatment need not be delayed but may be adapted when results are available.
- Be aware that bacterial colonisation will be present in people using a catheter and so urine dipstick testing and bacterial culture may be unreliable for diagnosing active infection.
- Refer people for urgent investigation if they have any of the following 'red flag' signs and symptoms:
 - Haematuria
 - Recurrent urinary tract infections (for example, three or more infections in the last 6 months)
 - Loin pain
 - Recurrent catheter blockages (for example, catheters blocking within 6 weeks of being changed)
 - Hydronephrosis or kidney stones on imaging
 - Biochemical evidence of renal deterioration

Information and Support

- Offer people with neurogenic urinary tract dysfunction, their family members and carers specific information and training. Ensure that people who are starting to use, or are using, a bladder management system that involves the use of catheters, appliances, or pads:
 - Receive training, support, and review from healthcare professionals who are trained to provide support in the relevant bladder management systems and are knowledgeable about the range of products available.
 - Have access to a range of products that meet their needs.
 - Have their products reviewed, at a maximum of 2 yearly intervals.

Treatment to Improve Bladder Storage

- Offer bladder wall injection with botulinum toxin type A* to adults:
 - With spinal cord disease (for example, spinal cord injury or multiple sclerosis) and
 - With symptoms of an overactive bladder and
 - In whom antimuscarinic drugs have proved to be ineffective or poorly tolerated
- Ensure that patients who have been offered continuing treatment with repeated botulinum toxin type A injections have prompt access to

repeat injections when symptoms return.

Treatment to Prevent Urinary Tract Infection

- Do not routinely use antibiotic prophylaxis for urinary tract infections in people with neurogenic lower urinary tract dysfunction.

Monitoring and Surveillance Protocols

- Offer lifelong ultrasound surveillance of the kidneys to people who are judged to be at high risk of renal complications (for example, consider surveillance ultrasound scanning at annual or 2 yearly intervals). Those at high risk include people with spinal cord injury or spina bifida and those with adverse features on urodynamic investigations such as impaired bladder compliance, detrusor-sphincter dyssynergia, or vesico-ureteric reflux.

Access to and Interaction with Services

- When managing the transition of a person from paediatric services to adult services for ongoing care of neurogenic lower urinary tract dysfunction:
 - Formulate a clear structured care pathway at an early stage and involve the person and/or their parents and carers
 - Involve the young person's parents and carers when preparing transfer documentation with the young person's consent
 - Provide a full summary of the person's clinical history, investigation results, and details of treatments for the person and receiving clinician
 - Integrate information from the multidisciplinary health team into the transfer documentation
 - Identify and plan the urological services that will need to be continued after the transition of care
 - Formally transfer care to a named individual(s)

* At the time of publication (August 2012), botulinum toxin type A did not have United Kingdom (UK) marketing authorisation for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's (GMC's) [Good practice in prescribing medicines – guidance for doctors](#)

for further information.

Implementation Tools

Audit Criteria/Indicators

Clinical Algorithm

Foreign Language Translations

Patient Resources

Resources

For information about availability, see the *Availability of Companion Documents and Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

National Clinical Guideline Centre. Urinary incontinence in neurological disease. Management of lower urinary tract dysfunction in neurological disease. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. 40 p. (Clinical guideline; no. 148).

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2012 Aug

Guideline Developer(s)

National Clinical Guideline Centre - National Government Agency [Non-U.S.]

Source(s) of Funding

National Institute for Health and Clinical Excellence (NICE)

Guideline Committee

Guideline Development Group

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

All members of the guideline development group and all members of the National Clinical Guideline Centre staff were required to make formal

declarations of interest at the outset of each meeting, and these were updated at every subsequent meeting throughout the development process. No interests were declared that required actions. See Appendix B of the full version of the original guideline document for interests declared.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the [National Institute for Health and Clinical Excellence \(NICE\) Web site](#) .

Availability of Companion Documents

- Urinary incontinence in neurological disease: management of lower urinary tract dysfunction in neurological disease. Full guideline. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. 368 p. (Clinical guideline; no. 148). Electronic copies: Available in Portable Document Format (PDF) from the [National Institute for Health and Clinical Excellence \(NICE\) Web site](#) .
- Lower limb peripheral arterial disease. Appendices. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. 551 p. (Clinical guideline; no. 148). Electronic copies: Available in PDF from the [NICE Web site](#) .
- Urinary incontinence in neurological disease. Clinical audit tools. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. (Clinical guideline; no. 148). Electronic copies: Available from the [NICE Web site](#) .
- Urinary incontinence in neurological disease. Costing report. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. 21 p. (Clinical guideline; no. 148). Electronic copies: Available in PDF from the [NICE Web site](#) .
- Urinary incontinence in neurological disease. Costing template. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. (Clinical guideline; no. 148). Electronic copies: from the [NICE Web site](#) .
- Urinary incontinence in neurological disease overview. NICE Pathways. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. (Clinical guideline; no. 148). Electronic copies: Available from the [NICE Web site](#) .
- The guidelines manual 2009. London (UK): National Institute for Health and Clinical Excellence (NICE); 2009 Jan. Electronic copies: Available in PDF from the [NICE Archive Web site](#) .

Patient Resources

The following is available:

- Urinary incontinence in neurological disease. Understanding NICE guidance. London (UK): National Institute for Health and Clinical Excellence (NICE); 2012 Aug. 23 p. (Clinical guideline; no. 148). Electronic copies: Available in Portable Document Format (PDF) from the [National Institute for Health and Clinical Excellence \(NICE\)](#) . Also available in Welsh from the [NICE Web site](#) .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This summary was completed by ECRI Institute on November 16, 2012.

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